

REMARKS

Claims 1-3, 5-8, 30, 32, 33, and 35-39 are pending in the present application. Claims 4, 9-29, 31, 34, and 40-62 have been cancelled without prejudice or disclaimer to the subject matter contained therein. The Applicants reserve the right to file a divisional application directed to the cancelled subject matter.

ARGUMENTS WITH RESPECT TO THE REJECTION UNDER 35 U.S.C. §103

Claims 1-3, 5-8, 30, 32, 33, and 35-39 have been rejected under 35 U.S.C. §103 as being unpatentable over Morris (US-A-5,021,840) in view of Calcaterra et al. (US-A-6,570,750). This rejection under 35 U.S.C. §103 to claims 1-3, 5-8, 30, 32, 33, and 35-39 is respectfully traversed.

One embodiment of the present invention is directed to a metallization stack in an integrated MEMS device. As set forth in amended independent claim 1, the metallization stack includes a substrate having an electrically conductive structure; a field oxide, having a contact hole therein, formed over the substrate; a silicide layer formed in the contact hole of the field oxide; a titanium-tungsten layer, formed directly on said silicide layer, to operatively contact the electrically conductive structure in the substrate; and an integral platinum layer. The integral platinum layer has a first portion formed directly on the titanium-tungsten layer and a second portion formed directly on the field oxide. The silicide layer, titanium-tungsten layer, and integral platinum layer, together, form an electrical connection to the electrically conductive structure.

Another embodiment of the present invention is directed to a metallization stack in an integrated MEMS device. As set forth in amended independent claim 32, the metallization stack includes a substrate having an electrically conductive structure; a field oxide, having a contact hole therein, formed over the substrate; a silicide layer formed in the contact hole of the field oxide; a titanium-tungsten layer, formed directly on said silicide layer, to operatively contact the electrically conductive structure in the substrate; and an integral platinum layer. The integral platinum layer has a first portion formed directly on the titanium-tungsten layer and a second portion formed directly on the field oxide.

In presenting the present rejection under 35 U.S.C. §103, the Examiner argues that Morris discloses a metallization stack formed of layers of silicide, titanium-tungsten, and

aluminum located within a contact hole formed in a field oxide layer. However, the Examiner recognizes that Morris fails to disclose a metallization stack formed of layers of silicide, titanium-tungsten, and platinum located within a contact hole formed in a field oxide layer. To meet this deficiency in Morris, the Examiner proposes to modify the teachings of Morris with the teachings of Calcaterra et al. The Examiner alleges that Calcaterra et al. teaches a platinum layer as a substitute for the aluminum layer of Morris. From these allegations, the Examiner concludes that one of ordinary skill in the art would find the presently claimed invention obvious in view of the combined teachings of Morris in view of Calcaterra et al. These positions by the Examiner are respectfully traversed.

As noted by the Examiner, Morris discloses a metallization stack formed of layers of silicide (25), titanium-tungsten (26), and aluminum (28) located within a contact hole in a field oxide layer (18). Moreover, Morris discloses a platinum layer (50) formed in a junction diode region. Morris teaches that the platinum layer (50) and the aluminum (28) are separate layers, not integral.

In contrast, the presently claimed invention, as set forth in amended independent claims 1 and 32, explicitly sets forth an integral platinum layer wherein the integral platinum layer has a first portion and a second portion. As recited in the claims, the first portion of the integral platinum layer is formed directly on the titanium-tungsten layer and the second portion of the integral platinum layer is formed directly on the field oxide.

Morris fails to teach, disclose, or suggest an integral metal layer because Morris teaches that layer (50) is platinum and layer (28) is aluminum. Since these two layers are two distinct metals, the layers must be separate layers, not an integral layer as claimed.

Furthermore, Morris fails to teach, disclose, or suggest an integral platinum layer having a first portion and a second portion wherein the first portion of the integral platinum layer is formed directly on the titanium-tungsten layer and the second portion of the integral platinum layer is formed directly on the field oxide. Lastly, Calcaterra et al. fails to teach, disclose, or suggest an integral platinum layer having a first portion and a second portion wherein the first portion of the integral platinum layer is formed directly on the titanium-tungsten layer and the second portion of the integral platinum layer is formed directly on the field oxide.

Therefore, since both Morris and Calcaterra et al., singly, fail to teach, disclose, or suggest an integral platinum layer having a first portion and a second portion wherein the first portion of the integral platinum layer is formed directly on the titanium-tungsten layer and the second portion of the integral platinum layer is formed directly on the field oxide, the combined teachings of Morris in view of Calcaterra et al. fail to teach, disclose, suggest, or render obvious an integral platinum layer having a first portion and a second portion wherein the first portion of the integral platinum layer is formed directly on the titanium-tungsten layer and the second portion of the integral platinum layer is formed directly on the field oxide.

With respect to dependent claims 2, 3, 5-8, 30, 33, and 35-39, the Applicants, for the sake of brevity, will not address the reasons supporting patentability for these individual dependent claims, as these claims depend directly or indirectly from allowable independent claims 1 and 32. The Applicants reserve the right to address the patentability of these dependent claims at a later time, should it be necessary.

CONCLUSION

Accordingly, in view of the amendments and remarks set forth above, the Examiner is respectfully requested to reconsider and withdraw all the present rejections. Also, an early indication of allowability is earnestly solicited.

Respectfully submitted,



Matthew E. Connors
Registration No. 33,298
Gauthier & Connors LLP
225 Franklin Street, Suite 3300
Boston, Massachusetts 02110
Telephone: (617) 426-9180
Extension 112

MEC/MJN/mjn